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(54) PRESSURE-SENSITIVE TACKY ADHESIVE AND DOCUMENT PRODUCED BY USING THE ADHESIVE

(57)Abstract:
PURPOSE: To obtain a pressure-sensitive tacky adhesive suitable as an easily openable tacky adhesive for documents necessitating temporary sealing such as mail forms by compounding a main tacky agent with an acicular substance and/or flaky substance free from affinity with the main agent.
CONSTITUTION: The pressure-sensitive tacky adhesive is produced by compounding (A) 100 pts.wt. of a main tacky agent preferably produced by adding polymethyl methacrylate, a styrene-butadiene rubber, etc., to natural rubber with (B1) 10-100 pts.wt. of an acicular substance and/or a flaky substance free from affinity with the component A, preferably an acicular substance having an average length of 10-20μm, an average diameter of 0.2-0.5μm, an apparent specific gravity of 0.05-0.6 and an elastic modulus of 10,000-40,000 kg/mm2 (preferably potassium 6-titanate) or (B2) 5-100 pts.wt. of the component B1 and 0-50 pts.wt. (10-100 pts.wt. in total) of a fine particulate substance (e.g. microsilica) and dispersing the component in a medium such as water. A document or mail form is produced by applying the pressure-sensitive tacky adhesive to at least the contacting surface of a substrate in an amount of 0.1-10g/m2 in terms of dried weight.

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* NOTICES *

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The pressure-sensitive binder characterized by blending with adhesion base resin this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter.
[Claim 2] The pressure-sensitive binder according to claim 1 whose blending ratio of coal of the needlelike matter and/or the flat-like matter is the 10 weight sections - 100 weight section to the adhesion base resin 100 weight section.
[Claim 3] The pressure-sensitive binder characterized by blending with adhesion base resin this adhesion base resin, the microparticulate matter which does not have compatibility and this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter.
[Claim 4] The pressure-sensitive binder according to claim 3 whose blending ratio of coal of the sum total of the microparticulate matter, the needlelike matter, and/or the flat-like matter the blending ratio of coal of the microparticulate matter is 0 weight section - 50 weight section to the adhesion base resin 100 weight section, the blending ratio of coal of the needlelike matter and/or the flat-like matter is the 5 weight sections - 100 weight section, and is the 10 weight sections - 100 weight section.
[Claim 5] The document with which the pressure-sensitive binder layer which blended with adhesion base resin this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter is characterized by being prepared in the adhesion schedule side of a base material at least.
[Claim 6] The document with which the pressure-sensitive binder layer which blended with adhesion base resin this adhesion base resin, the microparticulate matter which does not have compatibility and this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter is characterized by being prepared in the adhesion schedule side of a base material at least.
[Claim 7] the coverage after desiccation of the pressure-sensitive binder in a base material side -- 0.1 g/m2 - 10 g/m2 it is -- document according to claim 5 or 6 characterized by things.
[Claim 8] The document according to claim 5 or 6 whose document is e-mail form.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the pressure-sensitive binder suitably used as an open-easiness binder of the electronic forms which need adhesion temporarily like the e-mail form for confidential postcards, a price tag tag, and a print form with a card, concerning a pressure-sensitive binder.
[0002]
[Description of the Prior Art] In recent years, as an object for the notice from a financial institution, a government office, etc., after printing a need matter by a printer etc., the e-mail form which folds up in a sealed letter gestalt etc. and is shipped by adhering is used widely. And as this kind of e-mail form, it folds up at 3 chip boxes, the periphery section is adhered with a pressure-sensitive binder, and the thing of the gestalt which cuts out three sides thru/or four sides from a perforation, and is developed is widely used at the time of opening.
[0003] However, since this e-mail form needs to cut out the periphery section from a perforation at the time of opening, it has the problem that the effective area of an information record part becomes small with the problem of generating of dust. Moreover, since this e-mail form was sticking only the periphery section, in present Postal Law, it was not able to become sealed letter treatment and was not able to mail a dimension by postcard treatment cheap as postcard size.
[0004] Although the film for adhesion is put, it folds up and the thing of the sticking gestalt is also known on the other hand, after recording a need matter, and the thing of this gestalt could be mailed by postcard treatment, the film put, the activity was needed and this type of thing had the fault from which a manufacture process becomes complicated.
[0005] In order to solve these problems, previously, these people used styrene butadiene rubber as the resinous principle, and proposed the e-mail form which applied to the adhesive face the pressure-sensitive binder which made water distribute this, a micro silica, etc. (JP, 2-133370, A).
[0006] Without record of a need matter being possible to a binder spreading side, and an alphabetic character etc. transferring to it by a printer etc., at the time of opening, this e-mail form can exfoliate in the adhesion interface of pressure-sensitive binders, and has the advantage that reading of the information printed to the pressure-sensitive binder spreading side is possible.
[0007]
[Problem(s) to be Solved by the Invention] However, in this kind of pressure-sensitive binder, generally, in order to acquire the adhesion of pressure-sensitive binders, and the adhesion to a base material, a glass transition point (Tg) is low as a resinous principle, and the strong thing of a feeling of smeariness (feeling of a tuck), for example, natural rubber, a styrene butadiene rubber, acrylic resin, etc. are used. Therefore, the blocking at the time of improvement in the printing property to a pressure-sensitive binder spreading front face and the neglect storage after pressure-sensitive binder spreading needs to be prevented.

[0008] And additives, such as a micro silica, starch and talc, clay, a kaolin, and an acrylic bead The configuration is microparticulate as indicated by JP, 4-4283, A. When the pressure-sensitive binder was applied to the e-mail form base material 1 as shown in drawing 1 , and the pressure-sensitive binder layer 3 is formed, As shown in drawing 2 , an additive 4 is hard to be held in the pressure-sensitive binder layer 3, and a spot-like smeariness part (called a dry tack) remains a little after spreading desiccation of a pressure-sensitive binder. When two or more e-mail forms which applied the binder were accumulated and were saved, mutual stuck with a self-weight and there was a problem of the problem that blocking arises, the powder omission (piling) of an additive occurring further in the time of printing or the case of printing.
[0009] Moreover, after folding up and carrying out sealing of the e-mail form, as it is shown in drawing 3 , an additive 4 is buried into the pressure-sensitive binder layer 3, for example, the address section is used as opening, and when are folded up, and two or more sheets are accumulated and being saved, there is a problem that the feeling of a tuck of the address section and the rear face of the piled-up e-mail form arises. Therefore, although it will be hard coming to generate blocking if the content of an additive is increased, in order for the adhesion of a binder to decline, it is necessary to make [many] coverage, and there is a problem of increase of weight increase or cost. Moreover, when adhesion declines, there is a problem of a binder being unable to be omitted with friction with the roll of a printer etc., or folding up e-mail form and it becoming impossible to adhere certainly.
[0010] This invention is what was made in view of the above-mentioned point. As a binder for e-mail forms especially Although adhesion does not decline at least, and coverage does not produce blocking in pressure

extent produced when it can fall, generating of a dry tack is repeated so much and it puts and binder layers stick powerfully further On the occasion of exfoliation, it exfoliates easily from the adhesion interface, without printing transferring, and the pressure-sensitive binder which can be opened is offered a technical problem.

[0011]

[Means for Solving the Problem] The pressure-sensitive binder of this invention is characterized by blending with adhesion base resin this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter.

[0012] Moreover, the pressure-sensitive binder of this invention is characterized by blending with adhesion base resin this adhesion base resin, the microparticulate matter which does not have compatibility and this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter.

[0013] Furthermore, the document of this invention is characterized by preparing at least the pressure-sensitive binder layer which blended with adhesion base resin this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter in the adhesion schedule side of a base material.

[0014] Moreover, the document of this invention is characterized by preparing at least the pressure-sensitive binder layer which blended with adhesion base resin this adhesion base resin, the microparticulate matter which does not have compatibility and this adhesion base resin, the needlelike matter which does not have compatibility, and/or the flat-like matter in the adhesion schedule side of a base material.

[0015] As adhesion base resin in the pressure-sensitive binder of this invention, natural rubber (NR), esterification natural rubber, styrene butadiene rubber (SBR), chloroprene rubber, polyvinyl acetate, polymethylmethacrylate (PMMA), etc. are mentioned, or such mixture is mentioned.

[0016] Adhesion with a base material can be made larger than autohesion nature, holding the autohesion nature of pressure-sensitive binders by adjusting the mixed rate suitably in mixing of these adhesion base resin. What added polymethylmethacrylate and styrene butadiene rubber in order to raise preferably adhesion with a base material, i.e., an anchor effect, to natural rubber with the high property which discovers the autohesion nature of pressure-sensitive binders by pressurization is mentioned. Polymethylmethacrylate is good to mix with other adhesion base resin and to use rather than it is used independently. As for such adhesion base resin, a microparticulate thing with a particle size of 0.1 micrometers - about 3 micrometers is usually used.

[0017] Next, as the needlelike matter blended with adhesion base resin, or flat-like matter, any of mineral matter and an organic substance are sufficient, and although chosen as arbitration from that the configuration is needlelike or the thing which has various gestalten, such as the shape of a swirl and a scale, that what is necessary is just flat [-like], especially the needlelike matter is suitable.

[0018] As needlelike matter, average die length has a 0.2 micrometers - about 0.5 micrometers desirable thing as 10 micrometers - 20 micrometers and a pitch diameter. Since the part which projects from a pressure-sensitive binder layer front face will split finely if average die length exceeds 20 micrometers, it is not desirable, and since it will be buried in the interior of a pressure-sensitive binder layer if shorter than 10 micrometers, it is not desirable.

[0019] When printing processing and NIP fitness are taken into consideration, as an elastic modulus of the needlelike matter, the thing of 2 is desirable [the needlelike matter / in order to make low sedimentation nature when making a pressure-sensitive binder into an emulsion and considering as the paint, the thing of 0.05-0.6 has desirable apparent specific gravity, and] mm 10,000kg/mm 2-40,000kg /.

[0020] What is necessary is to mention a glass fiber, a carbon fiber, PAN system fiber, a metallic crystal, a metallic-compounds crystal, etc., for example, and just not to have a pressure-sensitive binder and compatibility (compatibility) as such needlelike matter. A thing desirable as needlelike matter is the crystal of 6-potassium titanate (K2 O and 6TiO2), although there is nothing, it has compatibility, and apparent specific gravity is 0.2 (true specific gravity = 3.3), 28,000kg /of elastics modulus is [mm] 2, and water and compatibility are suitable as a pressure-sensitive binder component.

[0021] such needlelike matter -- the adhesion base resin 100 weight section -- receiving -- the 10 weight sections - 100 weight section -- it is good for 10 - 50 weight section to come out comparatively preferably, and to blend. Since the adhesion of a pressure-sensitive binder is too weak when the blending ratio of coal of the needlelike matter exceeds the 100 weight sections, if it is not desirable and is fewer than 10 weight sections, adhesive strength will become strong too much and generating of blocking, a tuck, etc. will become remarkable.

[0022] It distributes to media, such as water, and adhesion base resin and the needlelike matter are applied on a base material as an emulsion condition. water -- the adhesion base resin 100 weight section -- receiving -- usually -- the 100 weight sections - 500 weight section -- comparatively -- carrying out -- if -- good -- desirable -- the 200 weight sections - 300 weight section -- it is . Moreover, it is good to add an emulsifier if needed, oleic acid soap, castor oil potassium soap, casein, glue, gelatin, etc. are mentioned as an emulsifier, and it is usually added at a rate of 0.5 weight sections - 2 weight section to the adhesion base resin 100 weight section.

[0023] Moreover, to the pressure-sensitive binder of this invention, microparticulate matter, such as the micro silica which does not have compatibility with adhesion base resin for the purpose of amelioration of writing fitness, permutite, activity alumina gel, a calcium carbonate, a zinc oxide, titanium oxide, talc, clay, a kaolin, activated clay, an acrylic bead, starch, a cellulose, and milt balun, may be added. By adding [in / both / the pressure-sensitive binder of this invention] the needlelike matter and/or the flat-like

matter, while being able to lessen the addition of the microparticulate matter, the powder omission of the microparticulate matter can be prevented.
[0024] the particle size of the microparticulate matter -- 10mmum- that whose 30 micrometers are in the range of 0.5 micrometers - 10 micrometers preferably is suitable. As for the addition of the microparticulate matter, it is desirable to add at a rate of 5 weight sections - 30 weight section to the adhesion base resin 100 weight section, and it is good to add the total quantity of the microparticulate matter and the needlelike matter in the range of the 10 weight sections - 100 weight section to the adhesion base resin 100 weight section.
[0025] In addition, to the pressure-sensitive binder of this invention, waxes, such as polyethylene wax and carnauba wax, can be added at a rate of 0.01 weight section - 20 weight section to the adhesion base resin 100 weight section for the purpose of the improvement in slipping nature, such as handling nature at the time of applying to a postcard etc., and NIP conveyance nature, and improvement in blocking resistance. If [than 20 weight sections] more, writing fitness will get worse, or problems, such as poor impression at the time of printing and an adhesive agent, arise.
[0026] Furthermore, to to the pressure-sensitive binder of this invention, ammonia, ethanolamine, etc. may be added as an ultraviolet ray absorbent aiming at degradation prevention, a non-ion system surfactant, an anion system surfactant (straight-mineral-oil system), etc. may be added as a defoaming agent, and a silica etc. may be added as a defoaming assistant to it.
[0027] Moreover, low-molecular polyethylene, such as adhesion base resin and the resin which does not have compatibility, for example, water-dispersion giant-molecule polyester, thermoplastic elastomer, and low density polyethylene, an ionomer, a vinyl acetate-olefine copolymer, etc. may be combined with the pressure-sensitive binder of this invention in the range of 1 weight section - 50 weight section to the adhesion base resin 100 weight section for the purpose of preventing secondary condensation of the adhesion base resin when considering as an emulsion.
[0028] Although white paper of fine quality is used, even if the base materials with which the pressure-sensitive binder of this invention is applied are synthetic-resin films, such as polyethylene terephthalate, polyethylene, polypropylene, and a vinyl chloride, the front face can usually be used for them corona treatment and by carrying out mat processing.
[0029] It is applied on such a base material by spreading means, such as a bar coating machine, an air knife coating machine, flexo one, a gravure coating machine, a roll coater, and a die head coating machine, and the pressure-sensitive binder layer 6 as shown in drawing 4 is formed, and let the pressure-sensitive binder of this invention be a document.
[0030] the coverage of a pressure-sensitive binder -- after desiccation -- it is -- 0.1 g/m2 - 10 g/m2 -- desirable -- 1.0 g/m2 - 3.0 g/m2 It is desirable. Since the coverage can be lessened as compared with the pressure-sensitive binder which added only the microparticulate matter according to the pressure-sensitive binder of this invention, when it prints from a pressure-sensitive binder layer, ink can penetrate the inside of a pressure-sensitive binder layer, even a base material can be made to be able to reach, and it can prevent more metastatic [of printing at the time of exfoliating]. That is, in the pressure-sensitive binder of this invention, adhesion sufficient in the range and printing nature of the above-mentioned coverage are obtained.
[0031] Next, the document of this invention is explained. Drawing showing the document with which drawing 5 a has the pressure-sensitive binder layer of this invention, drawing in which drawing 5 b shows a bending condition, and drawing 6 are drawings for explaining the relation of the adhesion of the document of this invention.
[0032] First, it bends, and it is used from projected lines 11a and 11b, carrying out three fold like drawing 5 b, and the document 11 shown in drawing 5 a makes the left column the public information entry field X which is usually a form 3 times the magnitude of a postcard (fixed form postcard), and was shown with the broken line and as which address information etc. is filled in, and has made it the confidential information entry field Y as which confidential information etc. is filled in in the inside column and the right column. and as shown in drawing 4 , the pressure-sensitive binder layer 6 forms all over one side of a base material 1 -- having -- on the other hand -- being alike -- the strong adhesive adhesives layer which is different from easy-releasability is prepared. In addition, the pressure-sensitive binder layer 6 may be formed only in an adhesion schedule field.
[0033] After drawing 6 forms the printing layer 113 in the 112nd page of the pressure-sensitive binder layer of Column Y while being able to set on the document 11 shown in drawing 5 The condition of having carried out, bent and carried out the seal of the printing layer to inside is shown. The adhesion of a base material 111 and the pressure-sensitive binder layer 112 alpha, If adhesion of gamma, the pressure-sensitive binder layer 112 of the right column Y, and the printing layer 113 is set [the adhesion of pressure-sensitive binder layer 112 comrades] to delta for the adhesion of beta, the pressure-sensitive binder 112 of the inside column Y, and the printing layer 113, it will become the relation between the adhesion alpha> adhesion beta and the adhesion gamma> adhesion delta.
[0034] Even if the field which counters at the time of a seal since a pressure-sensitive binder layer is further established by heat when it can do although ink penetrates a pressure-sensitive binder layer since the pressure-sensitive binder layer 112 can be made thin as the pressure-sensitive binder of this invention was mentioned above, and a base material layer is permeated directly, and using a toner as a printing means to a pressure is applied, a printing layer does not transfer to an opposed face at the time of exfoliation.
[0035] Explanation of the operation of a document 11 carries out one side printing of the confidential

information, such as a notice of a due date of a financial product, for the public information of addresses, such as the address and a name, and others at once to the public information entry field X in a document 11 first again at the confidential information entry field Y using printers, such as NIP. Then, three fold of the document 11 is carried out like drawing 5 b from those bending projected lines 11a and 11b, the inside column and the right column are stuck with the pressure-sensitive binder of this invention, and the left column and the inside column are pasted up with powerful adhesives (not shown). If a document 11 is mailed as e-mail form in this condition, postage will serve as postcard treatment. A recipient can open without damaging confidential information by exfoliating between the pressure-sensitive binder layers 112, and can get the confidential information.

[0036] Hereafter, other examples of a document are explained. First, it is called a half type, a pressure-sensitive binder layer is prepared only in the whole surface or the adhesion schedule field of one side of a base material, and confidential information is entered in an adhesion schedule field, and from the bending projected line 22, like drawing 7 b, drawing 7 a is bent and it is stuck to it. Let the part to which it is not stuck be a public information entry field. The use to many notices of a telephone toll, an electric toll, a membership system broadcast toll, etc. is presented with this document.

[0037] It is called a double fold type, a pressure-sensitive binder layer is prepared all over one side of a base material, and confidential information is filled in on the pressure-sensitive binder layer, and from the bending projected line 33, like drawing 8 b, drawing 8 a is bent and it is stuck to it. Let the other sides of a base material be public information entry fields. The use to many notices of a taxation deduction certificate, a telephone rate, the amount of the electrical and electric equipment used, a waterworks toll, etc. is presented with this document.

[0038] It is called a double postcard type, a pressure-sensitive binder layer is prepared only in the whole surface or the adhesion schedule field of one side of a base material, and confidential information is entered in an adhesion schedule field, and from bending projected line 44a, like drawing 9 b, drawing 9 a is bent and it is stuck to it. Let the part to which it is not stuck be a public information entry field. This document is bent from bending projected line 44b, and use of a double postcard etc. is presented with it.

[0039] It is called a cut type, a pressure-sensitive binder layer is prepared all over one side of a base material, and confidential information is filled in on the pressure-sensitive binder layer, and from bending projected line 55a, like drawing 10 b, drawing 10 a is bent and it is stuck to it. Let the other sides of a base material be public information entry fields. And it is cut from cut line 55b. This document is used for a double-sided printer (NIP) etc., and can print information required for both sides at once, it is very efficient and the use to a taxation deduction certificate, a telephone charge advice, etc. is presented with it.

[0040]

[Function] As shown in drawing 4 , the pressure-sensitive binder layer 6 of this invention is easy to be held in the pressure-sensitive binder 3 for the configuration of the needlelike object 5, and does not produce a piling phenomenon.

[0041] Therefore, coverage of a pressure-sensitive binder can be lessened and the dry tack by the pressure-sensitive binder 3 after sealing can be reduced, and further, while making binders stick powerfully, it becomes possible to exfoliate and open by the interface of binder layers.

[0042] Moreover, since it does not adhere in pressure extent to produce when it puts so much, when blocking is not produced and it is used as a binder for e-mail forms, it can do with what is excellent in writing fitness.

[0043] Hereafter, an example explains this invention to a detail. In addition, although it examined about the adhesiveness of the detachability of a pressure-sensitive binder layer, the adhesiveness of binder spreading sides and the condition of a stripped plane, a binder spreading side, and binder a non-applying side according to the dry tack nature, blocking nature, and friction about the pressure-sensitive binder spreading sheet obtained in the following example, and the condition of a stripped plane and the result was indicated in each example, respectively, the test method and valuation basis are as follows.

[0044] (1) Dry tack nature JIS According to K-5400, turn the binder spreading side up on a glass plate, and a pressure-sensitive binder spreading sheet is set horizontally. Subsequently, a five-sheet pile is placed on a binder spreading side, a spindle with a smooth base is placed for gauze on the gauze, and it is 15 g/cm2. Gauze is lengthened and removed after leaving it for 24 hours, as a pressure is applied. Dry tack nature was judged by the adhesiveness of the gauze at that time, and an adhesive layer, and the successor of the gauze which remains on a binder spreading side.

[0045] Although, as for the successor of gauze, the thing and trigonum mark in which a duplex round mark does not show adhesiveness to at the time of gauze exfoliation, the successor of gauze does not have the thing and round mark in which the successor of gauze does not remain, either, and the evaluation in Table 1 does not almost have a dry tack do not remain, a dry tack is accepted for the thing and x mark with which some dry tack is accepted.

[0046] (2) It is 2 20g/cm with superposition and an SUS blocking circuit tester in the binder spreading sides of the pressure-sensitive binder spreading sheet of two sheets which applied the blocking nature same pressure-sensitive binder. After applying the pressure and leaving it for 24 hours, it judged in the state of adhesion of the sheet when raising one in the piled-up sheet of two sheets.

[0047] Although the thing and trigonum mark which blocking does not almost have what has evaluation nothing [a duplex round mark / blocking], and a round mark, and exfoliate simply have blocking a little, what has a practically nothing problem, and x mark are the things of blocking size.

[0048] (3) the constant temperature which adjusted the trial of the existence of exfoliation of the pressure-sensitive binder layer by friction to **3% temperature **1 degree C and 65% of humidity of 25 degrees C about the friction test profit **** pressure-sensitive binder spreading sheet of the pressure-sensitive binder layer by friction -- it carried out in the constant humidity interior of a room.
[0049] JIS It applies to L0823, L0849, R6772, and P8136 correspondingly. It attaches so that a pressure-sensitive binder spreading sheet may not be made as for sag to Suga Test Instruments FR-2 mold (**** type) as 22cmx8cm magnitude. As only a self-weight of a friction child is added in the friction child by whom the white cheesecloth for friction was fixed to the friction cloth sliding surface, without adding a wait, it judges from the survival which remained in extent and white cheesecloth of exfoliation of an adhesive layer in the front face of the pressure-sensitive binder spreading sheet when carrying out a pressure-sensitive binder spreading sheet top 200 ****s.
[0050] In a double circle, a pressure-sensitive binder spreading sheet front face to a binder separates, and evaluation does not fall, but a binder the thing and round mark which have not adhered also to a white cheesecloth The thing and trigonum mark with which a binder hardly separates and falls from an adhesion spreading sheet front face, and a binder has hardly adhered also to a white cheesecloth Peeling of a binder (powder is included) is accepted from an adhesion spreading sheet front face, the thing and x mark which have adhered also to the white cheesecloth a little have remarkable peeling of an adhesion spreading sheet front face to a binder (powder is included), and adhesion is accepted also in a white cheesecloth.
[0051] (4) It printed to the binder spreading side of the adhesiveness of binder spreading sides, and the condition pressure-sensitive binder sheet of a stripped plane, subsequently to drawing 5 b, it carried out, and sealing was carried out to 3 chip boxes, they were pressurized, the binder spreading side was pasted up, the adhesive face of the obtained postcard Mr. sheet was exfoliated so that it might be shown, and binder spreading sides might overlap, and the existence of transition of printing in adhesiveness and a stripped plane was judged.
[0052] Although the evaluation of adhesiveness is [a double circle] good, the adhesiveness of the thing and white round mark which transition of printing does not have is good and the adhesiveness of the thing and black dot mark which transition of printing does not almost have is good although the adhesiveness of the thing and white trigonum mark with which transition of printing is accepted a little is good -- transition of printing -- a little -- a certain thing and x mark -- adhesiveness -- a weak thing and the black trigonum mark are the things of the transition size of printing, although adhesiveness is good.
[0053] (5) After printing like the above to the binder spreading side of condition each pressure-sensitive binder spreading sheet of the adhesiveness of a binder spreading side, and a binder a non-applying side, and a stripped plane, the gap between rolls of superposition and a sealing machine was adjusted to 50 micrometers, the paper which has not applied the binder was pressurized, and it evaluated about both adhesion and the existence of transition of printing.
[0054] The thing and white round mark which adhesiveness of a double circle with binder non-applying paper is [a round mark / evaluation] very high, and do not have transition of printing after exfoliation, either The thing and black dot mark adhesiveness with binder non-applying paper is [mark] very high, and transition of printing does not have [mark] it after exfoliation, either It is adhesive, and as for the thing with binder non-applying paper and white trigonum mark which transition of printing does not have, either, it is adhesive and what has adhesiveness weak [the thing with binder non-applying paper and x mark which transition of printing does not have after exfoliation, either] with binder non-applying paper, and the black trigonum mark have none of most adhesiveness with binder non-applying paper.
[0055]
[Example 1] 22 weight sections and a micro silica for styrene butadiene rubber Nine weight sections, It is 69 weight ****** pressure-sensitive binder (pH=9 and the viscosity of 3500cps in 30 degrees C) about water. Hereafter to call it pressure-sensitive binder 1a 6-potassium titanate [K2 O and 6TiO2, Needle crystal, die length of 10-20 micrometers (average die length of 15 micrometers), 0.2-0.5 micrometers (pitch diameter of 0.3 micrometers) of diameters, trade name tee SUMO D, and] made from Otsuka Chemistry were added 5% of the weight to the weight of the styrene butadiene rubber which is adhesion base resin, and pressure-sensitive binder 1b was prepared.
[0056] Moreover, similarly it added 15% of the weight, similarly pressure-sensitive binder 1c was added 25% of the weight, 1d of pressure-sensitive binders was added 35% of the weight still the more nearly same, and pressure-sensitive binder 1e was prepared.
[0057] As [show / for 5 minutes, / binder / by the mixer, / in drawing 5 a / after agitating each obtained pressure-sensitive binder, respectively] On the front face of the paper of fine quality for non-impact printers [the Sanyo-Kokusaku Pulp Co., Ltd. make and FPLB-S (70)] of magnitude (5.5 inches x 12 inches) 3 times the size of a postcard, with a bar coder Applied, respectively so that the coverage at the time of desiccation might serve as 2 g/m2 (equivalent to 2 micrometers of thickness), and 4 g/m2 (equivalent to 4 micrometers of thickness), and it was made to dry for 15 minutes at 25 degrees C, and a total of ten sorts of pressure-sensitive binder spreading sheets were obtained.
[0058] Next, when the test pattern was printed with the copy machine made from Canon (NP-4835) to each binder spreading side, it had printing fitness with any good sheet.
[0059] Each sheet after printing was used as 3 chip boxes so that binder spreading sides might overlap, as shown in drawing 5 b, the gap between rolls of sealing [:by Dai Nippon Printing Co., Ltd. 7000U] was pressurized as about 80 micrometers, the binder spreading side was pasted up, e-mail form was obtained, and the above-mentioned trial was presented.

[0060]
[Table 1]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		1a	1b	1c	1d	1e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	△	◎	◎	○	○
	4	△	○	○	○	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	○	○	○	○	○
	4	○	○	○	○	○

[0061] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, especially in the pressure-sensitive binder of this invention, as compared with the adhesiveness of a binder spreading side, and a binder a non-applying side, and metastatic [of printing], adhesiveness is good to the case of binder spreading sides, and transition of printing is hardly accepted in it.
[0062]
[Example 2] It replaced with pressure-sensitive binder 1a in an example 1, and except having used 33 weight sections and a micro silica for natural rubber, and having used 60 weight ****** pressure-sensitive binder (pH=9, viscosity of 3400cps in 30 degrees C: binder 2a) for 7 weight sections and water, pressure-sensitive binder 2b - 2e was prepared like the example 1, respectively, the pressure-sensitive binder sheet was prepared similarly, and it examined like the example 1.
[0063] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.
[0064]
[Table 2]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		2a	2b	2c	2d	2e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	×	◎	◎	◎	◎
	4	×	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	○	○
	4	△	◎	◎	○	△
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	▲	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	◎	◎	◎	○	○
	4	◎	◎	◎	○	○

[0065] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, in the pressure-sensitive binder of this invention, on the occasion of binder spreading sides and a binder spreading side, and binder non-applying side adhesion, adhesiveness is good and transition of printing is hardly accepted.

[0066]

[Example 3] It replaces with pressure-sensitive binder 1a in an example 1. Styrene butadiene rubber 15 weight sections, One weight section and a micro silica for 15 weight sections and polymethylmethacrylate One weight section, [natural rubber] Except having used 64 weight ****** pressure-sensitive binder (pH=8.5, viscosity of 3200cps in 30 degrees C: binder 3a) for water, the pressure-sensitive binders 3b-3e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.

[0067] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.

[0068] A test result is shown in Table 3.

[0069]

[Table 3]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		3a	3b	3c	3d	3e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	△	◎	◎	◎	◎
	4	△	○	○	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	○	○	○	○	△
	4	○	◎	○	○	○

[0070] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, especially in the pressure-sensitive binder of this invention, as compared with the adhesiveness of a binder spreading side, and a binder a non-applying side, and metastatic [of printing], adhesiveness is good to the case of binder spreading sides, and transition of printing is hardly accepted in it.
[0071]
[Example 4] It replaces with pressure-sensitive binder 1a in an example 1. Natural rubber 28 weight sections, Three weight sections and Pori acetic-acid vinyl for styrene butadiene rubber Two weight sections, For polymethylmethacrylate 1 weight section and a micro silica Six weight sections, Except having used the pressure-sensitive binder (pH=8.5, viscosity of 3500cps in 30 degrees C: binder 4a) which consists water of the 60 weight sections, the pressure-sensitive binders 4b-4e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.
[0072] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.
[0073] A test result is shown in Table 4.
[0074]
[Table 4]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		4 a	4 b	4 c	4 d	4 e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	×	◎	◎	◎	◎
	4	×	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	○	△
	4	△	◎	◎	○	△
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	▲	○	◎	◎	○
	4	▲	○	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	◎	◎	◎	○	○
	4	◎	◎	◎	◎	○

[0075] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, especially in the pressure-sensitive binder of this invention, adhesiveness is good to the case of binder spreading sides, and transition of printing is hardly accepted in it.

[0076]

[Example 5] It replaced with pressure-sensitive binder 1a in an example 1, and except having used 22 weight sections and polyethylene wax for styrene butadiene rubber, and having used 68 weight ****** pressure-sensitive binder (pH=9, viscosity of 500cps in 30 degrees C: binder 5a) for 3 weight sections, the micro silica 7 weight section, and water, the pressure-sensitive binders 5b-5e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.

[0077] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.

[0078] A test result is shown in Table 5.

[0079]

[Table 5]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		5 a	5 b	5 c	5 d	5 e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	△	◎	◎	○	○
	4	△	◎	◎	○	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	○	◎	◎	○	○
	4	○	◎	◎	○	○

[0080] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, in the pressure-sensitive binder of this invention, on the occasion of binder spreading sides and a binder spreading side, and binder non-applying side adhesion, adhesiveness is good and transition of printing is hardly accepted.

[0081]

[Example 6] It replaced with pressure-sensitive binder 1a in an example 1, and except having used 31 weight sections for styrene butadiene rubber, and having used 69 weight ****** pressure-sensitive binder (pH=9, viscosity of 3500cps in 30 degrees C: binder 6a) for water, the pressure-sensitive binders 6b-6e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.

[0082] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.

[0083] A test result is shown in Table 6.

[0084]

[Table 6]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		6a	6b	6c	6d	6e
ドライタックの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	△	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	△	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	△	◎	◎	◎	○
	4	△	◎	◎	◎	○
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	○	◎	◎	○	○
	4	○	◎	◎	○	○

[0085] Both exfoliations of powder are the things which the pressure-sensitive binder of this invention does not have dry tack nature and blocking nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, and are excellent in abrasion resistance and which are hardly accepted. Moreover, in the pressure-sensitive binder of this invention, on the occasion of binder spreading sides and a binder spreading side, and binder non-applying side adhesion, adhesiveness is good and transition of printing is hardly accepted.

[0086]

[Example 7] It replaced with pressure-sensitive binder 1a in an example 1, and except having used 35 weight sections and a micro silica for esterification natural rubber, and having used 61 weight ****** pressure-sensitive binder (pH=9, viscosity of 1650cps in 30 degrees C: binder 7a) for 4 weight sections and water, the pressure-sensitive binders 7b-7e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.

[0087] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.

[0088] A test result is shown in Table 7.

[0089]

[Table 7]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		7 a	7 b	7 c	7 d	7 e
ドライタックの有無	2	○	◎	◎	◎	◎
	4	△	◎	◎	◎	◎
ブロッキングの有無	2	◎	◎	◎	◎	◎
	4	○	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	◎	◎	◎	◎	○
	4	◎	◎	◎	○	○
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	○	◎	◎	◎	○
	4	◒	◎	◎	◎	△
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	◒	○	○	○	△
	4	○	○	○	○	△

[0090] The pressure-sensitive binder of this invention does not have dry tack nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, especially, on the occasion of binder spreading sides and a binder spreading side, and binder non-applying side adhesion, adhesiveness is good and transition of printing is hardly accepted.

[0091]

[Example 8] It replaces with pressure-sensitive binder 1a in an example 1. Esterification natural rubber 33 weight sections, Except having used 5 weight sections and water for the micro silica, and having used 1 weight ****** pressure-sensitive binder (pH=9.5, viscosity 2000pcps in 30 degrees C: binder 8a) for 61 weight sections and starch The pressure-sensitive binders 8b-8e were prepared like the example 1, respectively, the binder sheet was prepared similarly, and it examined like the example 1.

[0092] In addition, when the printing same on each sheet as an example 1 was performed, any sheet has good printing fitness, and the postcard sheet was produced like the example 1, and the trial was presented similarly.

[0093] A test result is shown in Table 8.

[0094]

[Table 8]

	粘着剤塗布量 g／m²	感圧粘着剤シートの種類				
		8 a	8 b	8 c	8 d	8 e
ドライタックの有無	2	○	◎	◎	◎	◎
	4	○	◎	◎	◎	◎
ブロッキングの有無	2	◎	◎	◎	◎	◎
	4	◎	◎	◎	◎	◎
粘着層の摩擦による剥離の有無	2	◎	◎	◎	○	△
	4	◎	◎	○	△	△
粘着剤及び剥離面の状態（粘着剤塗布面同士）	2	◎	◎	◎	△	△
	4	○	◎	◎	◎	△
粘着剤及び剥離面の状態（粘着剤塗布面と非塗布面	2	◒	△	△	△	△
	4	○	○	△	△	△

[0095] The pressure-sensitive binder of this invention does not have dry tack nature as compared with the pressure-sensitive binder which does not contain the needlelike matter, especially, on the occasion of binder spreading sides and a binder spreading side, and binder non-applying side adhesion, adhesiveness is good and transition of printing is hardly accepted.
[0096]
[Example 9] Esterification natural rubber was diluted with the water of tales doses about the pressure-sensitive binder which added 4 weight sections for 35 weight sections and a micro silica, and added 6-potassium titanate crystal for water 1.5% of the weight to 61 weight ****** pressure-sensitive binder (pH=9, viscosity of 1650cps in 30 degrees C: binder 7a), and this pressure-sensitive binder, and solid content was made into 15 - 20 % of the weight.
[0097] When these two dilution was left for two weeks and was re-stirred, re-stirring is very easy for what added 6-potassium titanate, the stability of an emulsion is lost, what does not add 6-potassium titanate although it was able to be made to distribute finely serves as the shape of a firm wet cake, and re-stirring is difficult and was not able to make it distribute finely. That is, when 6-potassium titanate was added, it turned out that the preservation stability of a pressure-sensitive binder improves.
[0098]
[Effect of the Invention] When it excels in the preservation stability in the condition of having distributed underwater and uses as a binder for for example, e-mail forms, since there is little dry tack nature, the pressure sensitive adhesive of this invention is excellent also in the adhesion at the time of not both e-mail forms blocking and moreover adhering e-mail form with pile pressure extent of e-mail form. Moreover, since it excels in the bonding strength over the base material of a pressure-sensitive binder, there is no possibility that a pressure-sensitive binder may exfoliate by friction at the time of printing etc. Furthermore, after carrying out adhesion seal of the e-mail form, without the information printed to the adhesion spreading side imprinting, in case it exfoliates again, it exfoliates certainly in the interface of binders and the printed information can be read certainly.
[0099] Moreover, if the pressure-sensitive binder of this invention is used, since coverage can be lessened, when it considers as mail, weight can be mitigated, and moreover, it can excel in adhesiveness with a base material, and the adhesiveness between pressure-sensitive binder layers, and the tuck after piling in front of sealing of e-mail form and sealing can be made to mitigate.
[0100] Moreover, if a high pressure is applied, since adhesion with a binder spreading side, and binder a non-applying side is possible, the pressure-sensitive binder of this invention does not need to apply a binder all over a binder side, and will do the effectiveness of being able to improve economical efficiency so.

[Translation done.]